

USER'S MANUAL for LEVEL CONTROL RELAY LiR-7

Level control relay LiR-7 in general:

Level control relay LiR-7 is used to monitor and regulate the level of conductive liquids. This relay allows connect up to 4 level probes for minimal and maximal level and minimal and maximal alarm level control. LiR-7 works in 2 regimes: fill-in and pump-out.

You can connect separate level probes to LiR-7:

- Sensors with contact output – for example, float type sensors, pressure relays, etc.,
- Electrodes for conductive liquids (incl. water), where there low intensity current (50Hz) flows through the liquid, and this fact provides long-term electrode life compared to direct current (DC).

Advantages:

- LiR-7 provides visual control of level sensor circuit;
- 2 user's changeable regimes: fill-in or pump-out;
- Provides control of 2 alarm levels.

Operation

To terminals 1;2 ("~220V") connect the power supply. The green LED "POWER" will light and relay is prepared for work. If probes are connected correctly, in regime **fill-in relay** will operate as follows:

- If the liquid is above the setpoint "MIN" (diodes "AL-L" and "MIN" are flaming) after relay connecting to power supply, LEDs "POWER" and "REL.ON" are flaming, output relay is energized (contacts REL.ON are connected), the pump is switched on. When liquid goes above the "MAX" setpoint, green LED "MAX" is flaming and output relay is de-energized, LED "REL.ON" is not flaming anymore and the pump is switched off. Liquid goes down below "MAX" setpoint, LED "MAX" is die out, when liquid goes below "MIN" setpoint, green LED "MIN" dies out and output relay is ON again, LED "REL.ON" is flaming and the pump is ON. When liquid has reached "MAX" setpoint again, green LED "MAX" dies out and output relay trips OFF, the pump is OFF.
- If the liquid goes below minimal alarm level setpoint "AL-L" or reaches maximal alarm level setpoint "AL-H", the alarm signal relay "ALARM" trips, red LED "ALARM" is flaming.

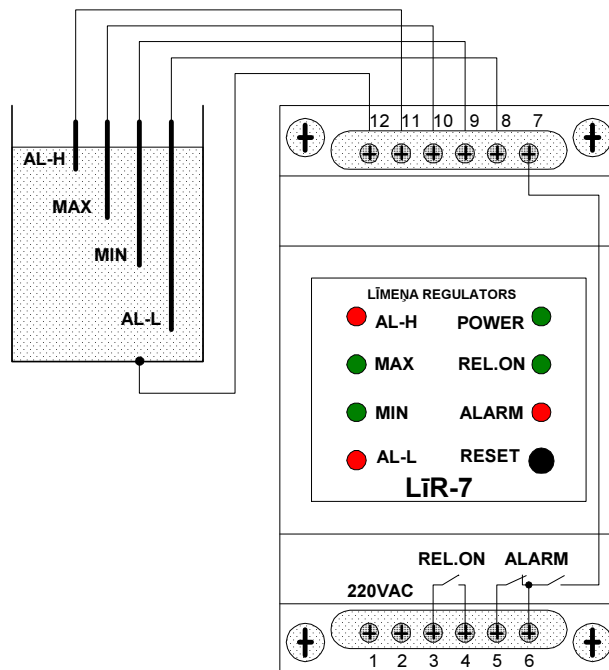
In regime pump-out:

- If the liquid is above the "MAX" setpoint (LEDs "AL-L", "MIN" and "MAX" are flaming), output relay is energized (contacts REL.ON closed, green diode "REL.ON" is flaming) and pump is switched-on. When liquid goes below setpoint "MIN", LED "MIN" dies out and relay is OFF, the pump is OFF. If liquid again goes above "MAX" setpoint, LED "MAX" and "REL.ON" is flaming, output relay is ON and the pump ON.
- Relay position at setpoints "AL-H" and "AL-L" is the same as at 1st regime.

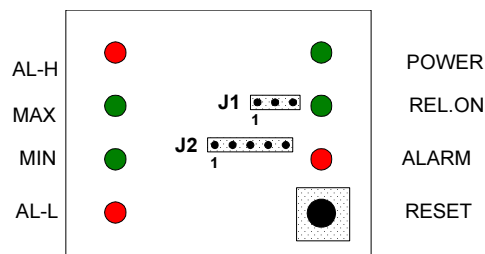
ATTENTION!!! If there is only one alarm setpoint "AL-H" or "AL-L", connect terminal you don't use to "COM" (if you use "AL-L" setpoint, connect AL-H&COM, if you use "AL-L" setpoint, close AL-L&COM). If you don't use any of ALARMS, close both AL-L and AL-H to COM terminal.

Diode "ALARM" and output relay "ALARM" switches ON, if the electrode "AL-L" isn't close or the common electrode isn't closed. ALARM function can be switched off by pressing button "RESET". If after pressing RESET alarm doesn't switch off, it means, that alarm situation is still remain or electrode connection circuits are damaged.

Att.1. LiR-7 sheme.



LiR-7 regimes (see Att.2):



Att.2. LiR-7 switching board.

Switching board **J2** determines working principles between minimal and maximal liquid level setpoints:

- Close terminals 2 and 3; 4 and 5 ($\overset{1}{\circ} \circ \circ \circ \circ \text{J2}$) and the relay will work **in fill-in regime**. This means, that relay contacts is closed till the liquid reaches MAX setpoint and then switches off. Relay contacts closes again to MIN setpoint and are still closed till liquid reaches the MAX setpoint.
- Close terminals 1 and 2; 3 and 4 ($\overset{1}{\circ} \circ \circ \circ \circ \text{J2}$) and the relay will work **in pump-out regime**. This means, that relay contacts is closed till the liquid reaches MIN setpoint and then switches off. Relay contacts closes again to MAX setpoint and are still closed till liquid reaches the MIN setpoint.

The switch **J1** determines LiR-7 output relay status, if there is alarm:

In **fill-in regime**:

- if you close J1 terminals 1 and 2 ($\overset{1}{\circ} \circ \circ \circ \text{J1}$) in alarm condition the output relay contacts will close and stay blocked (unblock by pressing RESET).

- if you close J1 terminals 2 and 3 ($\overset{1}{\circ} \circ \circ \circ \text{J1}$) in alarm condition the output relay contacts will open and stay blocked (unblock by pressing RESET).

In **pump-out regime**:

- if you close J1 terminals 1 and 2 ($\overset{1}{\circ} \circ \circ \circ \text{J1}$) in alarm condition the output relay contacts are open and stay blocked (unblock by pressing RESET).

- if you close J1 terminals 2 and 3 ($\overset{1}{\circ} \circ \circ \circ \text{J1}$) in alarm condition the output relay contacts will close and stay blocked (unblock by pressing RESET).

!!! If no J1 terminals are connected, alarm condition don't impress output relay.

Technical brief:

Power supply	~220VAC; 50 Hz
Consumption	<3W
Output relay parameters (active load)	~220VAC; 5A
Voltage between electrodes	12 VAC
Ambient	
- temperture	-10..+40°C
- relative humidity	20..95%RH
Protection degree (of case)	IP44
Dimensions, mm	55 x 70 x 110
Relay input circuits are galvanic isolated.	

Warranty

Warranty time – 12 months if the device has been exploiting in accordance to user's manual.